

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for illuminating an object comprising the following steps:

- generating a light beam with a laser,
- injecting the light beam into a microstructured optical element which spectrally broadens the light of the light beam, wherein the microstructured optical element comprises a photonic band gap material,
- shaping the spectrally broadened light beam to form an illumination light beam, and
- directing the illumination light beam onto the object,

wherein the laser is part of an instrument, and wherein the instrument is an instrument selected from the group consisting of a confocal scanning microscope, a flow cytometer, an endoscope, a chromatograph and a lithography instrument.

2. (Original) Method according to claim 1, further comprising the step: selecting at least one wavelength range from the spectrally broadened light and directing the light of the selected wavelength range onto the object.

3. (Original) Method according to claim 1, further comprising the step: adjusting the power of the spectrally broadened light.

4. (Original) Method according to claim 1, further comprising the step: adjusting the spectral composition of the spectrally broadened light.

5. (Currently Amended) ~~Method according to claim 1, further comprising the step:~~ A method for illuminating an object comprising the following steps:

- generating a light beam with a laser,
- injecting the light beam into a microstructured optical element which spectrally broadens the light of the light beam,
- shaping the spectrally broadened light beam to form an illumination light beam,
- adjusting the polarization of the spectrally broadened light, and

- directing the illumination light beam onto the object,

wherein the laser is part of an instrument, and wherein the instrument is an instrument selected from the group consisting of a confocal scanning microscope, a flow cytometer, an endoscope, a chromatograph and a lithography instrument.

6. (Original) Method according to claim 1, wherein the light beam is generated by a plurality of light pulses, wherein the light pulses have a pulse width and a chirp.

7. (Original) Method according to claim 6, further comprising the step: adjusting the pulse width of the light pulses.

8. (Original) Method according to claim 6, further comprising the step: adjusting the chirp of the light pulses.

9. (Currently Amended) An illuminating instrument comprising: a laser that emits a light beam, a microstructured optical element that spectrally broadens the light from the laser, wherein the microstructured optical element comprises a photonic band gap material, and a first optical means for shaping the spectrally broadened light into an illumination light beam, wherein the instrument is an instrument selected from the group consisting of a confocal scanning microscope, a flow cytometer, an endoscope, a chromatograph and a lithography instrument.

10. (Original) Illuminating instrument according to claim 9, further comprising an instrument for varying the power of the spectrally broadened light.

11. (Previously Presented) Illuminating instrument according to Claim 9, further comprising an instrument for varying the power of a portion of at least one wavelength of the spectrally broadened light.

12. (Original) Illuminating instrument according to claim 9, further comprising a second optical means for focussing the light beam from the laser onto the microstructured optical element.

13. (Original) Illuminating instrument according to claim 9, wherein the microstructured optical element contains a plurality of micro-optical structure elements, which have at least two different optical densities.

14. (Original) Illuminating instrument according to claim 9, wherein the microstructured optical element comprises a first region having a homogeneous structure and a second region formed by micro-optical structure elements.

15. (Currently Amended) Illuminating instrument according to claim ~~[[9]]~~ 14, wherein the first region encloses the second region.

16. (Previously Amended) Illuminating instrument according to Claim 9, wherein the microstructured optical element is an element selected from the group consisting of adjacent glass, plastic material, cavities, cannulas, webs, honeycombs and tubes.

17. (Currently Cancelled)

18. (Original) Illuminating instrument according to claim 9, wherein the microstructured optical element is configured as an optical fibre.

19. (Original) Illuminating instrument according to claim 9, wherein the microstructured optical element is configured as a tapered optical fibre.

20. (Currently Amended) A device for a microscopic inspection comprising: a laser that emits a light beam, a microstructured optical element that spectrally broadens the light from the laser and an optical means for shaping the spectrally broadened light into an illumination light beam,

wherein the microstructured optical element comprises a photonic band gap material,

wherein the device is a device selected from the group consisting of a confocal scanning microscope, a flow cytometer, an endoscope, a chromatograph and a lithography instrument.

21. (Currently Cancelled)

22. (Currently Amended) Device according to ~~claim 21~~ claim 20, wherein the microstructured optical element is configured as a tapered optical fibre.

23. (Cancelled)

24. (Currently Amended) An illuminating instrument comprising:

a laser that emits a light beam;

a microstructured optical element that spectrally broadens the light from the laser,  
wherein the microstructured optical element comprises a photonic band gap material;

a first optical means for shaping the spectrally broadened light into an illumination light beam; and

a means for adjusting the power or the spectral composition of the spectrally broadened light,

wherein the instrument is an instrument selected from the group consisting of a confocal scanning microscope, a flow cytometer, an endoscope, a chromatograph and a lithography instrument.

25. (Previously Presented) A method according to Claim 1, wherein the spectrally broadened light comprises of light pulses, wherein the light pulses have a pulse width and a chirp.

26. (Previously Presented) A method according to Claim 25, further comprising the step:

- adjusting the pulse width of the light pulses.

27. (Previously Presented) A method according to Claim 25, further comprising the step:

- adjusting the chirp of the light pulses.